

EXHIBIT D

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The Dow Chemical Company

**UNITED STATES DISTRICT COURT
DISTRICT OF NEW JERSEY**

IN RE URETHANE ANTITRUST
LITIGATION

Civil Action No.: 2:08-CV-05169 (WJM) (MF)

**DECLARATION OF MARISSA GINN,
PH.D.**

1. My name is Marissa Ginn. I am an economist and my doctorate is in economics.
2. I am a Vice President at Analysis Group, Inc., an economic consulting firm retained by The Dow Chemical Company.
3. Working under the direction of Dr. Keith Ugone, I evaluated, to the best of my ability using the information provided by Plaintiffs, the impact of re-estimating Dr. Marx's claimed damages models given the revisions to the backup materials of the May 25, 2012

Rebuttal Expert Report of Matthew E. Raiff, Ph.D., provided by Plaintiffs on February 29, 2016 (“February 29 revisions”).

4. The February 29 revisions were indicated on a one-page document entitled “Documentation of revisions to the backup materials of the May 25, 2012 Rebuttal Expert Report of Matthew E. Raiff, Ph.D. concerning updates to overcharge calculations.” This document listed two types of purchase transactions to be withdrawn from the final dataset containing estimated damages: (1) Carpenter non-polyols purchases, and (2) purchases not involving the U.S. Rather than just removing the transactions identified by Plaintiffs from the final damages dataset, I evaluated the impact of removing these transactions from the start of the model estimation (both the benchmark product category and transaction-level models, also called the first and second stages). I explain how this was done below for each type of transaction:

5. Carpenter non-polyols purchases.

- a. The Plaintiffs’ Trial Brief indicates that the non-polyols purchases were “propylene oxide purchased by Carpenter (which was mistakenly identified by Lyondell as polyols).”¹ In the February 29 revisions document provided by Plaintiffs, there were three products identified as non-polyols: “ARCOL POLYOL GP3000”, “ARCOL POLYOL GP3006” and “PLYPRPYLNGYLC”.
- b. As these products that were formerly misidentified as polyols were not classified as CFS polyols, they did not factor into the Polyols benchmark product category model. I therefore made no adjustment to the codes

¹ Plaintiffs’ Trial Brief, footnote 2, page 26.

(programs) for the benchmark product category models for these transactions.

- c. For the transaction-level models, I added one line of code to Dr. Marx's "Prepare data for client model.do" code, which is the first code in the transaction-level model. Specifically, I added a line to drop all instances where the "std_product_name" field was equal to either "ARCOL POLYOL GP3000", "ARCOL POLYOL GP3006" or "PLYPRPYLNGYLC". By doing so, I removed those purchases *prior* to the estimation of Dr. Marx's transaction-level model. I then proceeded to run the remainder of Dr. Marx's codes for the transaction-level model unchanged.
- d. I note that removing purchases from the transaction-level model may affect the amount of damages that are estimated for other purchase transactions. Thus, removing purchase transactions from the final damages dataset once the transaction-level model has been estimated using data that include these transactions is not equivalent to removing these same transactions prior to the estimation of the model.²

6. Purchases not involving the U.S.

- a. The Plaintiffs' Trial Brief indicates that the non-U.S. purchases were "certain purchases that were neither invoiced in, nor delivered to, the

² The removal of purchases prior to estimating the transaction-level model even affects the number of purchase transactions on which damages are estimated.

United States.”³ In the February 29 revisions document provided by Plaintiffs, there were two types of non-U.S. purchases identified: those where the ship-to city was indicated as “BRAZIL” and those where neither the ship-to region nor the bill-to region (the “shipto_region” and “billto_region” fields in Dr. Marx’s data) were indicated as “USA”.

- b. As these non-U.S. purchases could (and did) include benchmark products, I adjusted the codes for both the benchmark product category models and the transaction-level models (*i.e.*, the first and second stage models). This was done in order to remove these non-U.S. purchases *prior* to the estimation of these models.
- c. For the benchmark product category models, I modified Dr. Marx’s “medians.do” code (which calculates the weighted median prices that are the dependent variable in these models) by adding two lines. First, I dropped all purchase transactions with “BRAZIL” as the ship-to city (using the “shipto_city” field in Dr. Marx’s data) and for which the purchaser was marked as a Plaintiff (where the “flag_purchaser” field equaled “DICKSTEIN” in Dr. Marx’s data).^{4, 5} Second, I dropped all

³ Plaintiffs’ Trial Brief, footnote 2, page 26.

⁴ There are multiple purchase transactions for purchases shipped to the city of Brazil, Indiana for non-Plaintiffs. I therefore chose to only exclude purchase transactions for Plaintiffs with “BRAZIL” as the ship-to city. I note, however, that using this method, the data appear to still contain a very limited number of purchase transactions by non-Plaintiffs with “BRAZIL” as the ship-to city that are likely not shipped to the United States based on the “std_purchaser_name” field. If I had dropped all purchase transactions with “BRAZIL” as the ship-to city prior to the re-estimation of the benchmark product category models, I would have obtained approximately the same total damages estimate that Plaintiffs assert they obtain when re-estimating the models (*i.e.*, damages that are approximately \$75 million higher than Plaintiffs’ revised estimate). However, that method would mistakenly exclude multiple purchase transactions for purchases shipped to the city of Brazil, Indiana for non-Plaintiffs.

purchase transactions for which neither the ship-to region nor the bill-to region (the “shipto_region” and “billto_region” fields in Dr. Marx’s data) were marked as “USA”. By doing so, I removed those purchases *prior* to the estimation of the benchmark product category models.

- d. I then proceeded to run the remainder of Dr. Marx’s benchmark product category model codes unchanged to obtain the weighted median but-for prices. In doing so, the benchmark product category models were allowed to choose alternative “candidate” or “optional” variables, based on Dr. Marx’s methodology (using the AIC procedure). Although the coefficient estimates for the MDI and TDI benchmark product category models changed, all variables are the same and the estimated coefficients are similar in magnitude. Conversely, the Polyols benchmark product category model variables changed. Specifically, when re-estimating the Polyols benchmark product category model after excluding the non-U.S. transactions, the AIC procedure no longer results in the inclusion of the “change in the lag of the log(CFIPI)” variable. Instead, the model includes the “change in the lag of the log(wage)” variable. The associated coefficient for this new variable (*i.e.*, the “change in the lag of the log(wage)”) is 0.525 (as opposed to -0.547 on the “change in the lag of the log(CFIPI)” variable in the original model). In addition, in the re-estimated Polyols model, the coefficient on the “lag of log(CFIPI)” of -0.034 is nearly double the coefficient on this same variable in Dr. Marx’s

⁵ I note that no transactions were in fact dropped when making this modification to the code as no benchmark products with ship-to city “BRAZIL” were purchased by Plaintiffs.

original Polyols model (of -0.167). Further, the re-estimated model with the newly chosen candidate variables leads to an increase in damages.⁶

- e. For the transaction-level models, I added the same two lines of code to Dr. Marx's "Prepare data for client model.do" code, which is the first code in the transaction-level models, as described above in paragraph 6.c. By doing so, I removed those purchases *prior* to the estimation of the transaction-level model. I then proceeded to run the remainder of Dr. Marx's codes for the transaction-level model unchanged.
 - f. I note that all of the non-U.S. purchase transactions that were removed using the method outlined above were for Plaintiffs only. The majority of these purchase transactions were for ship-to or bill-to addresses in Canada, and a smaller number of transactions were for purchases by Woodbridge to regions outside of Canada (including Brazil).
7. The final impact of re-estimating Dr. Marx's claimed damages models given the February 29, 2016 revisions and my interpretation of how these might affect the estimation of Dr. Marx's models is summarized in the following table. I note that the difference I obtain between the damages from my re-estimated version of the models and Dr. Marx's revised damages are slightly below the figure provided by Plaintiffs' counsel in an email dated March 3, 2016 (\$73.7 million compared with "more than \$75 million," respectively). I am unable to verify the source of this

⁶ If, after removing the identified transactions, the Polyols benchmark product category model were required to use the exact same variables as Dr. Marx's original Polyols benchmark product category model, damages would be approximately \$35 million lower than the damages estimates obtained after removing the identified transactions when Dr. Marx's methodology using the AIC procedure is applied.

difference as I have not been provided with Dr. Marx's codes and other associated work product for her re-estimated models incorporating these revisions.

Product Category	Version of Model	Claimed Damages	Percent Overcharge
MDI	Dr. Marx Original	\$93,704,894	13.0%
	Dr. Marx Revised	\$91,330,503	12.9%
	Re-estimated with Revisions	\$92,020,934	13.0%
TDI	Dr. Marx Original	\$272,568,986	12.3%
	Dr. Marx Revised	\$259,550,448	12.3%
	Re-estimated with Revisions	\$266,924,717	12.6%
POLYOLS	Dr. Marx Original	\$250,513,469	10.0%
	Dr. Marx Revised	\$230,854,160	10.8%
	Re-estimated with Revisions	\$296,503,656	13.9%
TOTAL	Dr. Marx Original	\$616,787,349	11.4%
	Dr. Marx Revised	\$581,735,111	11.7%
	Re-estimated with Revisions	\$655,449,307	13.2%

* * * *

I declare under penalty of perjury that the foregoing is true and correct. I am aware that if any of the foregoing statements made by me are willfully false, I am subject to punishment.

Dated: March 10, 2016

Marissa Ginn, Ph.D.